STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.:	MO-0107026
Owner:	Rose Acre Farms
Address:	PO Box 339, Hawk Point, MO. 63349
Continuing Authority:	Same as above
Address:	Same as above
Operation Name:	Lincoln County Egg Farm
Address:	Box 339, Hawk Point, MO. 63349
Legal Description:	See Facility Description
Latitude/Longitude:	See Facility Description
First Classified Stream and ID:	West Fork Cuivre River
USGS Basin & Sub-watershed No:	07110008-030005

is authorized to discharge from the operation described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

Water quality standards do not have to be exceeded to determine the unauthorized discharge of processed waste as defined in special condition 2(b). Operation of the company under this permit shall not cause a violation of water quality standards. Land application fields include all land where the company conducts land application. These provisions apply to all the company's regulated activities.

OPERATION DESCRIPTION

Outfalls #001 - #025 – Concentrated Animal Feeding Operation - SIC #0252
No Discharge of Process Waste, Class IA
Five earthen storage basins/concrete pit/land application of manure using subsurface injection, surface irrigation and solids spreading/egg wash water/domestic sewage/storm water runoff. Design population equivalent is 117,000. Design number of animals is 1,300,000 layer hens (43,333 animal units). Design flow is 28,555 gallons/day; 10,422,575 gallons/year; 4,920 tons solid manure/year. Domestic Waste Design Flow is 450 gallons/day; 164,250 gallons/year.
This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

August 12, 2005
Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

August 11, 2010
Expiration Date

Edward Galbraith, Director of Staff, Clean Water Commission

MO 780-0041 (10-93)

OPERATION DESCRIPTION (continued)
Total Number of Acres Available for Land Application:

Percent Slope	Land Owned by Permittee	Non-owned Land with Spreading Agreement Acres	Total
0-10%	200	5722	5922
10-20%			
TOTAL	200	5722	5922

Outfall #001: Basins A, B, C System Type: 3 earthen storage basins/land application/storm water runoff/ domestic wastewater from shop maintenance utilizing septic tank pumped to Basin B
Legal Description: SE ¼, NE ¼, Sec. 16, T49N, R2W, Lincoln County
Lat/Long: +3900581/-09107501
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Storage volume: 268,460 cubic feet; 2,008,080 gallons
Total Basin Depths: 13 feet below overflow level.
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 11 feet below overflow level

Outfall #002 – Deleted

Outfall #009 - Basins D, E System Type: 2 earthen storage basins/land application/storm water runoff/domestic wastewater from office complex and egg wash water pumped to Basin D
Legal Description: SW ¼, NW ¼, Sec. 15, T49N, R2W, Lincoln County
Lat/Long: +3900546/-09107274
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Storage volume: 516,540 cubic feet; 3,863,740 gallons
Total Basin Depths: 11 feet below overflow level
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 9 feet below overflow level

Outfall #010 - System Type: Concrete Pit/land application/storm water runoff
Legal Description: SE ¼, NE ¼, Sec. 16, T49N, R2W, Lincoln County
Lat/Long: +3900576/-09107484
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Storage volume: 81,648 cubic feet; 610,727 gallons
Upper Operating Level: 2.7 feet below top of wall
Lower Operating Level: 9 feet below top of wall

Outfalls #001, #009 & #010
Total Design Number of Animals: 800,000 laying hens
Legal Description: See Outfalls 001, 009, 010
Total Animal Design Population Equivalent: 72,000 Animal Units 26,667
Total Animal Design Liquid Volume (1 in 10 year): 28,555 gallons per day; 10,422,575 gallons per year
Total Design Storage 227 days. Total Storage Volume: 866,648 cubic feet; 6,482,547 gallons
Total Domestic Design Flow: 450 gallons per day; 164,250 gallons per year
Land Application: Rates are based on the plant available nitrogen approach.

OPERATION DESCRIPTION (continued)

Outfall #011 - Buildings 11 and 12. System Type: Two High Rise Buildings over concrete pits
Legal Description: SW ¼, NW ¼, Sec. 15, T49N, R2W, Lincoln County
Lat/Long: +39010151/-09107446
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Design Number of Animals: 500,000 laying hens
Design Population Equivalent: 45,000 Animal Units: 16,666
Biosolids Volume: 289,380 cu.ft./year 4,920 tons per year
Design Storage: 372 days Storage volume: 294,840 cubic feet at 3 feet from bottom of pits
Total Basin Depth: 9 feet above bottom of pits
Upper Operating Level: 5 feet above bottom of pits
Land Application: Rates are based on the plant available nitrogen approach.

Outfall #003 - Storm Water - Runoff from building and storage basins in small creek south of Basin C
Legal Description: NW ¼, SE ¼, NE ¼, Sec. 16, T49N, R2W, Lincoln County
Lat/Long: +39005661/-09107515
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Unnamed Tributary to West Fork Cuivre River.

Outfall #004 – Deleted

Outfall #005 - Storm Water – Land Application Site
Legal Description: NE ¼, NW ¼, SE ¼, Sec. 15, T49N, R2W, Lincoln County.
Lat/Long: +3900446/-09106586
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Unnamed Tributary to West Fork Cuivre River at property line.

Outfall #006 - Storm Water – Land Application Site
Legal Description: SW ¼, NW ¼, NE ¼, Sec. 15, T49N, R2W, Lincoln County.
Lat/Long: +3901078/-09107056
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Unnamed Tributary to West Fork Cuivre River at property line.

Outfall #007 - Deleted

Outfall #008 - Storm Water - Pipe south of Basin B
Legal Description: SE ¼, SE ¼, NE ¼, Sec. 16, T49N, R2W, Lincoln County.
Lat/Long: +3900555/-09107495
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Unnamed Tributary to West Fork Cuivre River.

Outfall #012 - Stream Monitoring-Upstream
Legal Description: SW ¼, NE ¼, SW ¼, Sec. 9, T49N, R3W, Lincoln County.
Lat/Long: +3901327/-09115262
First Classified Stream and ID: Bear Cr. (C) 00193
USGS Basin & Sub-watershed No: 07110008-030002
Bear Creek at property line.

OPERATION DESCRIPTION (continued)

Outfall #013- Stream Monitoring
Legal Description: NE ¼, NE ¼, NW ¼, Sec. 10, T49N, R3W, Lincoln County.
Lat/Long: +3902119/-09114096
First Classified Stream and ID: Bear Cr. (C) 00193
USGS Basin & Sub-watershed No: 07110008-030002
Bear Creek at property line.

Outfall #014 - Stream Monitoring-Upstream
Legal Description: SW ¼, NE ¼, NE ¼, Sec. 18, T50N, R2W, Lincoln County.
Lat/Long: +3906250/-09110063
First Classified Stream and ID: Big Lead Cr. (C) 00180
USGS Basin & Sub-watershed No: 07110008-030004
Big Lead Creek at property line.

Outfall #015 - Stream Monitoring
Legal Description: SE ¼, NW ¼, SW ¼, Sec. 17, T50N, R2W, Lincoln County.
Lat/Long: +39055991/-09109272
First Classified Stream and ID: Big Lead Cr. (C) 00180
USGS Basin & Sub-watershed No: 07110008-030004
Big Lead Creek at property line.

Outfall #016- Stream Monitoring-Upstream
Legal Description: SE ¼, SW ¼, SW ¼, Sec. 5, T48N, R2W, Lincoln County.
Lat/Long: +3856506/-09109480
First Classified Stream and ID: Coon Cr. (C) 00208
USGS Basin & Sub-watershed No: 07110008-040001
Coon Creek at property line.

Outfall #017 - Stream Monitoring
Legal Description: SE ¼, NE ¼, SE ¼, Sec. 5, T48N, R2W, Lincoln County.
Lat/Long: +3857087/-09108549
First Classified Stream and ID: Coon Cr. (C) 00208
USGS Basin & Sub-watershed No. 07110008-040001
Coon Creek at property line.

Outfall #018 - Stream Monitoring-Upstream
Legal Description: SW ¼, SE ¼, SE ¼, Sec. 13, T49N, R2W, Lincoln County.
Lat/Long: +3900250/-09104277
First Classified Stream and ID: W. Fk. Cuivre River (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Unnamed Tributary to Cottonwood Branch at property line.

Outfall #019 - Stream Monitoring
Legal Description: SW ¼, NW ¼, NW ¼, Sec. 18, T49N, R1W, Lincoln County.
Lat/Long: +3900595/-09104133
First Classified Stream and ID: W. Fk. Cuivre R. (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Cottonwood Branch at property line.

OPERATION DESCRIPTION (continued)

Outfall #020 - Storm Water from production complex on east side at road crossing.
Legal Description: SW ¼, SW ¼, NW ¼, Sec. 15, T49N, R2W, Lincoln County.
Lat/Long: +3900548/-09107358
First Classified Stream and ID: W. Fk. Cuivre R. (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Unnamed Tributary to West Fork Cuivre River at property line.

Outfall #021- Stream Monitoring-Upstream
Legal Description: NE ¼, SE ¼, SE ¼, Sec. 7, T48N, R2W, Lincoln County.
Lat/Long: +3856065/-09110221
First Classified Stream and ID: Coon Cr. (C) 00208
USGS Basin & Sub-watershed No: 07110008-040001
Coon Creek at road crossing.

Outfall #022 - Stream Monitoring-Upstream
Legal Description: NE ¼, SW ¼, NE ¼, Sec. 8, T48N, R2W, Lincoln County.
Lat/Long: +3856282/-09109245
First Classified Stream and ID: Coon Cr. (C) 00208
USGS Basin & Sub-watershed No: 07110008-040001
Unnamed Tributary to Coon Creek at road crossing.

Outfall #023 - Stream Monitoring-Upstream
Legal Description: SW ¼, SE ¼, SW ¼, Sec. 15, T49N, R1W, Lincoln County.
Lat/Long: +3900140/-09100235
First Classified Stream and ID: Spring Cr. (C) 03444
USGS Basin & Sub-watershed No: 07110008-050002
Spring Creek at property line.

Outfall #024 - Stream Monitoring
Legal Description: NW ¼, SW ¼, SE ¼, Sec. 15, T49N, R1W, Lincoln County.
Lat/Long: +3900269/-09100005
First Classified Stream and ID: Spring Cr. (C) 03444
USGS Basin & Sub-watershed No: 07110008-050002
Spring Creek at property line.

Outfall #025 - Stream Monitoring-Upstream
Legal Description: NW ¼, NW ¼, NW ¼, Sec. 19, T49N, R1W, Lincoln County.
Lat/Long: +3900202/-09104156
First Classified Stream and ID: W. Fk. Cuivre R. (P) 00177
USGS Basin & Sub-watershed No: 07110008-030005
Cottonwood Branch at property line.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #001, #009, #010 & #011 - **Emergency Discharge Monitoring**				
Flow	MGD	No discharge of process waste except during emergency conditions.	once/day during discharge	24 hr. estimate
Dissolved Oxygen	mg/L	Comply with Water Quality Standards.	once/day during discharge	grab
Ammonia Nitrogen as N	mg/L	See Special Condition Numbers 1, 2, 3 & 11	once/day during discharge	grab
BOD	mg/L		once/day during discharge	grab
pH	SU		once/day during discharge	grab
Temperature	^{O}C		once/day during discharge	grab
Chloride	mg/L		once/day during discharge	grab
Outfalls #001, 009, 010, 011 - **Nutrient Monitoring For Land Application**				
Total Kjeldahl Nitrogen as N	mg/L	See Special Condition #4. Sample liquids 4 times/year between March 1 and November 30 and 1/year for nitrate. Sample sludges 1/month during land application periods. Sample solids from Outfall #011 within 30 days of land application	4/year	(liquid)composite
Ammonia Nitrogen as N	mg/L		4/year	(liquid)composite
Total Phosphorus as P	mg/L		4/year	(liquid)composite
Total Potassium as K	mg/L		4/year	(liquid)composite
Nitrate/Nitrite as N	mg/L		1/year	(liquid)composite
Per Cent Moisture(Sludge and Solids only)	%			
Outfalls #001, #009, #010 & #011 - **Land Application Operational Monitoring**				
Lagoon Freeboards	feet	See Special Condition Numbers 5, 13, 14, and 19 through 27.	once/month	measured
Outfall #011	depth of manure		once/month	measured
Land Application	hours		daily	total
Amount Land Applied	gallons or cubic feet		daily	total
Application Area	acres		daily	total
Application Rate	inches/ acre		daily	total
Rainfall	inches		daily	total

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2005 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		DAILY MAXIMUM		MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls Production Site #003, #008 & #020 - **Storm Water Runoff Limits**					
Flow	MGD	*	No discharge of process waste.	1/Month	24 hr. estimate
pH – Units	SU	*	See Special Conditions Numbers 1, 2 & 7	1/Month	grab
Ammonia Nitrogen as N	mg/L	2.5		1/Month	grab
Nitrate/nitrite as N	mg/L	*		1/Month	grab
Total Phosphorus as P	mg/L	*		1/Month	grab
Total Suspended Solids	mg/L	*		1/Month	grab
Temperature	°C	*		1/Month	grab
Land Application - Outfalls #005, #006 - **Storm Water Runoff**					
Flow	MGD	No discharge of process waste.		4/year	24 hr. estimate
pH – Units	SU	Water Quality Standards do not have to be exceeded to determine process waste being discharged.		4/year	grab
Ammonia Nitrogen as N	mg/L	See Special Condition Numbers 1, 2, & 6		4/year	grab
Nitrate/nitrite as N	mg/L			4/year	grab
Total Phosphorus as P	mg/L	Sample 4 times per year at two or three month intervals between March 1 and November 30.		4/year	grab
Total Suspended Solids	mg/L			4/year	grab
Temperature	°C			4/year	grab

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B. STANDARD CONDITIONS

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #012–019, 021-025 Stream Monitoring				
Flow	MGD	Samples shall be collected during the same week on a pre-determined sampling date on a monthly basis so sampling dates are unbiased by flow condition. Samples shall only be collected from flowing water. Samples from riffles are preferred. Do not collect a sample from pools that do not have water flowing into or out of the pool. See Special Condition Numbers 1, 2, 8 & 10.	1/month	24 hr. estimate
pH – Units	SU		1/month	grab
Ammonia Nitrogen as N	mg/L		1/month	grab
Nitrate + Nitrite as N	mg/L		1/month	grab
Total Phosphorus as P	mg/L		1/month	grab
Temperature	°C		1/month	grab
Total Suspended Solids	mg/L		1/month	grab
Dissolved Oxygen	mg/L		April through November between 1 hour before to 3 hours after sunrise	grab

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B. STANDARD CONDITIONS

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
All Application Fields - Storm Water Monitoring within 24 hours after land application				
Total Kjeldahl Nitrogen as N	mg/L	See requirements below. See Special Condition Numbers 1 and 2.	See sample collection frequency requirements below in paragraph d & e.	grab
Ammonia Nitrogen as N	mg/L			grab
Nitrate + Nitrite as N	mg/L			grab
Temperature	^{o}C			grab
pH – Units	SU			grab
Date of Runoff				
Field Number				
Crop				
Application Equipment				
Application Rate				

a. This is a monitoring only requirement.
b. This monitoring procedure will be used to evaluate the rainfall runoff from fields that have received rainfall within 24 hours after land application of process waste.
c. Samples shall be collected from one location that has rainfall runoff at the field boundary. If no flow at field boundary, sample shall be collected at the closest downgradient location where the flow will allow sample collection.
d. Samples shall be collected within the first sixty (60) minutes after the start of the runoff, or as soon as possible. Sampling is only required to be conducted during daylight hours. Permittee will address specific sampling procedures in Operations and Maintenance Manual.
e. One sample shall be collected from each field (maximum of two fields per rainfall event) that has rainfall runoff within 24 hours of land application for the first six (6) rainfall events during each of the following time periods: (March, April, May) – (June, July, August) – (September, October, November).
f. One control sample shall be collected per quarter from a location that has not received rainfall within 24 hours after land application of process waste. The control sample may be collected (1) during the same rainfall event from a field with the same crop or (2) from the location where the 24-hour sample was collected but during a subsequent rainfall event that has not occurred within 24 hours after land application of process waste.

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2005 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
All outfalls and land application fields - Monitoring of Unauthorized Discharges to Waters of the State				
Flow	MGD	No discharge of process waste. Water Quality Standards do not have to be exceeded to determine process waste being discharged. An unauthorized discharge is a permit violation in itself. See Special Condition Numbers 1, 2, 3,10 & 11	once/day during discharge	24 hr. estimate
Dissolved Oxygen	mg/L		once/day during discharge	grab
Ammonia Nitrogen as N	mg/L		once/day during discharge	grab
pH – Units	SU		once/day during discharge	grab
Temperature	^{o}C		once/day during discharge	grab
BOD	mg/L		once/day during discharge	grab
Total Suspended Solids	mg/L		once/day during discharge	grab
Chloride	mg/L		once/day during discharge	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY THE FIRST REPORT IS DUE October 28, 2005 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
All Land Application Fields - Soil Monitoring				
Nitrate nitrogen as N	mg/kg	See Special Condition Numbers 9, 10 & 12	1/year in Spring prior to Planting Season	Composite
Soil pH	Std Unit		1/3 Years	Composite
Percent Organic Matter	%		1/3 Years	Composite
Cation Exchange Capacity	Std Unit		1/3 Years	Composite
Available Phosphorus as P (Bray P-1 test method)	mg/kg		1/3 Years	Composite

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE October 28, 2006 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

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C. SPECIAL CONDITIONS

1. Water Quality Standards
   a. Operation shall not cause a violation of water quality standards rule under 10 CSR 20-7.031.
   b. General Criteria
      The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation or putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (5) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life;
      (6) There shall be no significant human health hazard from incidental contact with the water;
      (7) There shall be no acute toxicity to livestock or wildlife watering;
      (8) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (9) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such material is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (continued)

2. No-Discharge Requirement: No Discharge except during emergency conditions
   a. The permittee shall land apply wastewater and solid manure on suitable days as needed to keep the storage structures within design operating levels. The storage structures shall be maintained as near to the lower operating level (maximum storage capacity) as practicable so as to provide capacity for process wastewater flows plus the 1-in-10-year chronic rainfall and the 25-year, 24-hour rainfall based on the design storage period listed in the operation description. There shall be no-discharge of process waste during dry weather conditions when soils are suitable for land application. If wastewater has been properly land applied on all suitable days during the last 12 months, emergency discharge is allowed by overflow through the emergency spillways of the storage structures due to storm events exceeding the chronic or catastrophic storm events for the design storage period, but discharge shall cease as soon as land application is feasible. Process waste discharge is not allowed by pumping, siphoning, cutting of berms, runoff during land application, or any other method, except as authorized herein. Permittee shall make every reasonable effort to cease discharge as soon as soil conditions are suitable for land application.
   b. Definition: Process Waste
      Process waste as defined in 10 CSR 20-6.300 includes manure, wastewater and any precipitation which comes into contact with any manure, litter or bedding or any other raw material or intermediate or final material or product used in the production of animals or direct products. It includes spillage or overflow from animal watering systems; washing, cleaning or flushing of pens, barns, manure pits or other associated animal operations; washing or spray cooling of animals; dust control; storm water runoff from animal confinement areas and loading and unloading areas; storm water runoff from deposits of airborne dust from building ventilation systems or spillage of feed or manure; discharges from land application fields that occur during land application; and storm water runoff from land application fields if wastes are applied during frozen, snow covered or saturated soil conditions or if application rates exceed the maximum nitrogen utilization of the vegetation grown.

3. Monitoring of Emergency Discharges and Unauthorized Discharges (Outfalls - See Section A)
   a. Any emergency wastewater discharge or unauthorized discharge of process wastewater that occurs due to storage structure overflow, wastewater bypassing, manure stockpiles, land application or other sources shall be monitored once/day for parameters listed in Section A.
   b. Samples shall be collected of the discharge at the downgradient property boundary. Samples shall also be collected from any defined drainage that are above and below the receiving waters at the downgradient property boundary. If the receiving drainage is dry above the discharge point, report as no stream flow above the discharge point.
   c. Records shall be maintained for time, date, location, and duration of the discharge and an estimate of the discharge volume.
   d. Notify the department as soon as possible and no later than within 24 hours of any discharge that occurs and submit monitoring results within 30 days.

4. Nutrient Monitoring for Land Application (See Section A)
   a. Wastewater from Basins A, B, D, E, and the concrete pit shall be sampled and tested as 5 separate samples at least 4 times/year at regular intervals between March 1 and November 30. Samples shall be tested for parameters listed in Section A. Samples shall also be tested at least once/year for nitrate/nitrite nitrogen. Each sample shall be a composite sample consisting of at least four (4) grab samples from each basin and eight (8) grab samples from the concrete pit.
   b. Sludges from the earthen basins and concrete pit shall be sampled and tested separately. At least one composite sample shall be collected for each month when land application occurs. Each composite sample shall consist of at least 20 grab samples. Sludges shall be tested for Total Kjeldahl Nitrogen as N, Ammonia Nitrogen as N, Total Phosphorus as P, Total Potassium as K, and percent moisture.

C. SPECIAL CONDITIONS (continued)

4. Nutrient Monitoring for Land Application (continued)
   c. Manure from high rise buildings shall be sampled within 30 days of land application. Four composite samples consisting of 10-20 sub-samples each will be collected from the building to be emptied. Each building will be divided into four sections. A separate composite sample shall be tested for each of the four sections. Collect 10-20 sub-samples from each section using a soil probe inserted the full depth of the manure. Thoroughly mix the sub-samples to make the composite sample. The composite samples shall be tested for Total Kjeldahl Nitrogen (TKN) as N, Ammonia Nitrogen as N, Total Phosphorus as P, Total Potassium as K, Nitrate + Nitrite as N, percent moisture.

5. Land Application Operational Monitoring (See Section A)
   a. The inches of precipitation received at the production site shall be recorded daily and shall be reported quarterly for daily amounts, monthly totals, and cumulative total.
   b. Daily records shall be kept on file by each field for land application locations, volumes, acres, inches/hour, inches/acre, time of applications, and which basin, pit, or house was being emptied. These shall be summarized in the quarterly and annual reports. Daily totals shall be kept on file by permittee and cumulative amounts submitted quarterly and in the annual report.
   c. Monthly measurements shall be made of the water level in each basin and shall be recorded as feet below the emergency overflow elevation. Monthly measurements shall be made of the water level in the concrete pit and shall be recorded as feet below the overflow pipe. Monthly measurements shall be made of the manure depth in the high rise buildings. Report quarterly.
   d. Nitrogen application rates, crop yields, crop nitrogen requirements, and other operational monitoring shall be recorded for each field and reported in the annual report.

6. Storm Water Runoff Monitoring from land application sites
   a. Samples required in this paragraph shall be collected at the storm water monitoring locations listed in Section A of this permit if surface application of solid manure or wastewater has been conducted upgradient of the monitoring locations.
   b. Storm water runoff shall be monitored for 4 quarters after surface application for Flow, Ammonia Nitrogen as N, Nitrate/Nitrite Nitrogen as N, Total Phosphorus as P, Total Suspended Solids, pH, and Temperature.
   c. Samples shall be collected during storm water runoff events that occur after rainfalls of at least 0.5 inch within a 24 hour period. Collect the sample as soon as practicable after the beginning of storm water runoff.
   d. If there are no runoff events during a monitoring period, report as no discharge of storm water.
   e. A storm water runoff event is defined as a 24-hour period after the start of runoff. Runoff occurring after that will be considered as a separate runoff event.
   f. Monitoring is required for watersheds where process waste has been surface applied within the last 12 months. If there has been no surface application within a watershed for the previous 12 months, the quarterly and annual reports shall specify **"Monitoring not required due to no surface application within the last 12 months".**
   g. Storm water monitoring is not required for monitoring locations where sub-surface injection of wastewater has been conducted in accordance with permit conditions and pooling of effluent on ground surface does not occur during application.
   h. Storm water monitoring under this paragraph is in addition to the storm water monitoring within 24 hours required under Section A.

7. Storm Water Runoff Monitoring from Production Site
   a. Samples required in this paragraph shall be collected at the storm water monitoring locations listed in Section A of this permit.
   b. Storm water runoff shall be monitored once per month for Flow, Ammonia Nitrogen as N, Nitrate/Nitrite Nitrogen as N, Total Phosphorus as P, Total Suspended Solids, pH, and Temperature.
   c. Samples shall be collected during storm water runoff events that occur after rainfalls of at least 0.5 inch within a 24-hour period. Collect the sample as soon as practicable after the beginning of storm water runoff.
   d. If there are no runoff events during a monitoring period, report as no discharge of storm water.

C. SPECIAL CONDITIONS (continued)

7. Storm Water Runoff Monitoring from Production Site (continued)
   e. A storm water runoff event is defined as a 24-hour period after the start of runoff. Runoff occurring after that will be considered as a separate runoff event.
   f. Storm water runoff less than 2.5 mg/L Ammonia shall be considered uncontaminated storm water and may be discharged through this outfall. Storm water runoff exceeding 2.5 mg/L Ammonia is considered process waste and must comply with no-discharge requirements.

8. Stream Monitoring
   a. Samples required in this paragraph shall be collected and analyzed for the stream sampling locations listed in Section A of this permit.
   b. If there has been no application within a watershed for the previous 12 months, the quarterly and annual reports shall specify **"Monitoring not required due to no application within the last 12 months".**

9. Soil Monitoring
   a. Composite soil samples shall be collected from fields where land application will occur within the next 12 months.
   b. Nitrate Nitrogen as N shall be tested once per year. Soil samples may be collected for the top 0-6 or 0-12 inches or more.
   c. Soil pH, percent organic matter, Cation Exchange Capacity, Potassium as K, and Available Phosphorus as P (Bray P-1 test method) shall be sampled prior to land application and once every three (3) years thereafter, unless no additional land application has occurred at the site.
   d. Soil sampling shall be in accordance with University of Missouri (MU) publication G9110, "Sampling Your Soil For Testing" or other methods approved by the department.
   e. Soil testing methods shall be in accordance with North Dakota Agricultural Experiment Bulletin 499-Revised, "Recommended Chemical Soil Test Procedures for the North Central Region" or other test methods approved by the department.
   f. The annual report shall include a summary of the soil test results for each field.

10. Sample Collection, Preservation and Testing Methods
    In field testing methods or other approved methods for pH, Temperature, Nitrogen, and Phosphorus may be used for storm water and stream monitoring under this permit. Other testing shall be in accordance with the most current version of Standard Methods for the Examination of Waters and Wastewaters or other approved methods listed in 10 CSR 20-7.015(9)(A).

11. Required Notification of Releases
    a. Any wastewater discharge into waters of the state shall be reported to the department as soon as possible and no later than 24 hours after the start of the discharge.
    b. Spills or leaks that are contained on the property shall also be reported to the department within 24 hours, if the flow exceeds 1,000 gallons per day or 130 cubic feet per incident. This includes leaks from sewer lines, basins, pits, solids spreaders, other land application equipment, or irrigation systems.

C. SPECIAL CONDITIONS (continued)

12. Annual Report
An annual report is required in addition to the quarterly reporting under Section A of this permit. The annual report shall be submitted by January 28 of each year for the previous growing season from October 1 through September 30 or an alternate 12-month period approved by the department and listed in the Operation and Maintenance (O&M) Manual. This report shall be submitted using report forms approved by the Department and shall include a summary of the monitoring and recordkeeping required by the Special Conditions and Standard Conditions of this permit. The report shall specify the type of application for each field.

13. Operation Description
    a. This permit authorizes operation of the complete manure management system as described in the permit Operation Description, construction and operating permit applications, and O&M Manual. This includes manure and wastewater production, collection, storage, pumping equipment, pipelines, land application equipment, land application sites and any other features necessary to make the system complete and useable.
    b. The system listed in the operation description of this permit shall not be placed into operation until submittal of the engineering certification of completed construction and approval by the department.

14. Design Parameters
The design parameters listed below are operational guidelines to predict nutrient generation. Any proposed increases must be reported in accordance with Standard Conditions Part I, Section B, Paragraph 1., and may require a permit modification prior to the proposed change.
    a. Design Population Equivalent: The Design Population Equivalent is the human equivalent based on the annual average daily pounds of animals at the design capacity listed in the permit application. The average daily pounds of animals multiplied by a standard conversion factor equals the Design (human) Population Equivalent. The conversion factors are: 0.015 swine, 0.014 beef; 0.020 dairy; 0.030 laying hen; 0.040 turkey; and 0.05 poultry broiler.
    b. Design Flow: The design flow is based on the maximum annual flows including storm water flows during the one-in-ten year return frequency for annual or 365-day rainfall minus evaporation. The design flow is based on the time period when the flows are generated at the production site and not when flows are land applied. Portions of the design flow may be stored and carried over into the following year for land application, as necessary. Permittee may exceed the design flow when precipitation in any 365-day period exceeds the one-in-ten year annual precipitation amount.
    c. Animal Units: Animal Units are based on the maximum number and weight classification of animals in the permit application. As an operational guideline, the design number of animal units are calculated by averaging the weekly inventory number on a rolling 12-month average.
    d. Reporting Requirements: The actual operation numbers compared to the permitted design parameters shall be summarized in the annual report.

15. Construction Permits
All wastewater systems shall be constructed in accordance with a construction permit except where exempted by state regulations under 10 CSR 20-6.300.

16. Emergency Spillways
All lagoons or earthen basins shall have emergency spillways maintained as shown on the approved construction plans or approved as-built specifications.

17. HB1207
Permittee shall maintain compliance with all applicable provisions of state law under 640.700 to 640.755 RSMo, Supp.1996 (HB1207).

C. SPECIAL CONDITIONS (continued)

18. Reopener Clause
    a. This permit may be reopened and modified or alternatively revoked and reissued, to incorporate new or modified limitations or other conditions pertaining to phosphorus application rates to soils, the adequacy of wastewater basin liners, or other special conditions as may be necessary to protect waters of the state.
    b. Comprehensive Nutrient Management Plan.
    The permit may be modified or reopened to require submittal of a Comprehensive Nutrient Management Plan (CNMP) in accordance with USEPA and USDA guidelines and regulations or where determined appropriate by the department to meet water quality standards for nutrients.

19. Land Application Site Locations
    The permittee may land apply wastewater and solid manure to suitable sites located within the overall property boundaries and descriptions listed in the permit application and associated operation plans. Permittee may request additional sites, including non-owned property, by following permit modification procedures prior to land application.

    Permittee may sell or give away manure providing the following conditions are met:

    a. Requirements on Lincoln County Egg Farm's (LCEF) delivery or land application of LCEF chicken manure on land not covered by LCEF's Missouri State Operating Permit.
        (1) Manure shall be hauled in vehicles that will not deposit manure on public roadways.
        (2) Manure shall not be applied on frozen, snow-covered or saturated fields.
        (3) Manure shall not be stockpiled outside for more than two weeks and must be located where runoff will not enter waters of the state.
        (4) Manure shall not be applied to fields with slopes over 20%.
        (5) Manure applied to fields without permanent vegetation and with slopes between 10% and 20% shall be incorporated within forty-eight hours of application.
        (6) The application rate shall be a maximum of four tons of dry litter per acre per year. Individual lagoon analysis shall be used to determine the gallons of manure to be applied per acre per year so as to ensure LCEF does not inject more than 150 pounds of nitrogen per acre per year. In the event the maximum amounts (dry or wet) are exceeded, the Plant Available Nitrogen (PAN) approach shall be used.
        (7) Manure must be applied uniformly without depositing clods or clumps.
        (8) Manure shall not be applied within:
            a. 300 feet from any losing streams, open sinkholes, water supply wells, or water supply reservoirs;
            b. 50 feet from public roads, or property boundaries;
            c. 100 feet from permanent flowing streams and intermittent stream.
        (9) Manure shall be applied as close as practical to when plants will utilize nutrients. Manure shall not be applied to fields with dormant vegetation.
        (10) A current analysis of the manure for nitrogen, phosphorous and potassium must be provided to the landowner or operator of the land where the manure from LCEF is to be land-applied. The pounds of nitrogen applied per acre/year shall not exceed the nitrogen uptake of the crop grown.
        (11) An assessment shall be conducted on each field for potential phosphorus and nitrogen runoff. Land application rates may be limited by phosphorus based on the assessment.
        (12) Records of the name(s), date(s), the amount and location of manure delivered or land-applied shall be included in the annual report and maintained for a period of five years.

C. SPECIAL CONDITIONS (continued)

19. Land Application Site Locations (continued)

b. Requirements to purchase or receive chicken manure from LCEF:

The following checklist shall be completed by the landowner, or operator of the land where the manure from LCEF will be land-applied and shall be incorporated into a written agreement between LCEF and the landowner or operator of the land where the manure from LCEF will be land-applied. A copy of this checklist will be included in LCEF's annual report and maintained for a period of five years. The annual report shall include the amount and location of the manure received or purchased.

_____ certifies that:

1.□ Manure will be hauled in vehicles that will not deposit manure on public roadways.
2.□ Manure will no be applied on frozen, snow-covered or saturated fields.
3.□ Manure will not be stockpiled outside for more than two weeks and must be located where runoff will not enter waters of the state.
4.□ Manure will not be applied to fields with slopes over 20%.
5.□ Manure applied to fields without permanent vegetation and with slopes between 10% and 20% will be incorporated within forty-eight hours of application.
6.□ The application rate will be a maximum of four tons of dry litter per acre per year. Individual lagoon analysis will be used to determine the gallons of manure to be applied per acre per year so as to ensure LCEF does not inject more than 150 pounds of nitrogen per acre per year. In the event the maximum amounts (dry or wet) are exceeded, the PAN approach shall be used.
7.□ Manure will be applied uniformly without depositing clods or clumps.
8.□ Manure will not be applied within:
   a. 300 feet from any losing streams, open sinkholes, water supply wells, or water supply reservoirs;
   b. 50 feet from public roads, or property boundaries;
   c. 100 feet from permanent flowing streams and intermittent streams.
9.□ Manure shall be applied as close as practical to when plans will utilize nutrients. Manure shall not be applied to fields with dormant vegetation.
10.□ An assessment shall be conducted on each field for potential phosphorus and nitrogen runoff. Land application rates may be limited by phosphorus based on the assessment.

I have read and understand the above requirements and agree to comply with each. In the event my non-compliance with any of the above requirements is a violation of or causes a violation of the Missouri Clean Water Law, Chapter 644, RSMo, or any other laws of the State of Missouri, I understand that I may be liable for penalties or fines, or other sanctions a court of competent jurisdiction may impose.

_____

Date: _____

C. SPECIAL CONDITIONS (continued)

20. Separation Distances for Land Application Sites
    Separation distances (buffer zones) shall be maintained between the land application site and other features as follows:
    (a) Surface Application.
        (1) 300 feet from any losing stream, open sinkholes, water supply wells, or water supply reservoirs;
        (2) 100 feet from permanent flowing and intermittent streams; and
        (3) 50 feet from public roads or property boundaries unless application is by traveling gun. If application is by traveling gun, the set back distance shall be 100 feet.
    (b) Subsurface Injection.
        (1) 300 feet from any losing stream, open sinkholes, water supply wells, or water supply reservoirs;
        (2) 50 feet from permanent flowing and intermittent streams; and
        (3) 25 feet from public roads or property boundaries
    (c) Implementation procedures for these limitations shall be detailed in the O & M Manual.

21. Land Application Limitations
    (a) Process wastes should be land applied as close as practicable to when plants will utilize nutrients. Fall application for the spring crop season may be used where appropriate, but should not be the primary application period. Process wastes should be utilized as a nutrient resource.
    (b) Process wastes shall not be land applied during frozen, snow covered or saturated soil conditions.
    (c) Avoid application or reduce application rates and modify application practices when there is a local, applicable weather forecast or observation by permittee of an imminent or impending storm event. Land application shall cease as soon as practicable upon occurrence of any precipitation.
    (d) Land application equipment shall be operated in such a manner that wastes do not reach an adjoining property line. Rigorous inspection procedures shall be implemented for insuring that no visual spray drifts across public roads, property boundaries, or surface water sources. If the employee detects wind blown mist within 50 feet of an adjoining property line, public roadway, or surface water source, the application equipment shall be either moved farther away or shut down.
    (e) All application sites shall use soil conservation practices that meet Soil Conservation Standards of the USDA, Natural Resources Conservation Service (NRCS).
    (f) Spray irrigation systems (travelling guns, center pivot, fixed spray nozzles, etc) shall have automatic shut-off devices in the case of pressure loss.
    (g) Operators shall check irrigation pipelines, equipment and the perimeter of application fields at least once per hour during land application to insure that applied wastewater does not run off the fields where applied and does not enter waters of the state.
    (h) Land application rate shall be calculated during start up of spray irrigation equipment each day of operation. Calibration of traveling gun irrigation systems shall be verified at least once/month using rain gauges or collection pans within the spray pattern of the equipment to determine application rates in inch per application pass and inch per hour.
    (i) Permittee shall maintain a daily record of days that are suitable for land application based on soil moisture records, checkbook methods or other methods approved by the department. Suitable days will include soil moisture capacity of less than 75% field (saturation) capacity or other days when application can be performed without creating puddles of wastewater on the soil surface or runoff of applied wastewater. Suitable days by the checkbook method shall include any series of four days or more when there is no significant rainfall, and net evapotranspiration above rainfall exceeds 1.0 inch. When average daily temperatures are above 45 degrees, the typical evapotranspiration rate is 0.2 – 0.5 inch per day.
    (j) Implementation procedures for these limitations shall be detailed in the O & M Manual.

C. SPECIAL CONDITIONS (continued)

22. Hydraulic Application Rates and Field Slopes
    (a) Hydraulic application rates in acre inches/application pass and acre inches/day shall not exceed the soil infiltration capacity and soil moisture holding capacity (saturation capacity) of the soil. In no case shall the application result in the runoff of applied waste during or immediately following application.
    (b) Slopes exceeding twenty percent (20%) shall not be used for land application.
    (c) For field slopes less than ten percent (0-10%), surface application rates shall not exceed 0.5 acre inch/application pass and 1.0 acre inch/day depending on soil type except for short periods when initial soil moisture is significantly below field capacity in accordance with 10 CSR 20-8.020(15)(F)6.
    (d) For field slopes between ten and twenty percent (10-20%), surface application rates shall be reduced to half the rate for slopes less than 10%. For soil permeability of less than two-tenths inch (0.2") per hour, the designed maximum application rate should be as low as practicable and shall not exceed 0.2" per application pass. Permittee may land apply wastewater on these field slopes only after submitting a revised O&M Manual for achieving the above application rates and receiving prior approval from the department. The O&M plan shall include a topographic map showing slopes, drainage patterns and soils information. The number of acres approved for various slope conditions are listed in the operation/operation description section of this permit.
    (e) For subsurface injection, application rates shall be based on soil absorption capacity during land application so that there are no puddles of wastewater on the soil surface. For application rates exceeding 0.5 inch/day (13,577 gallons/acre), the permittee must submit a revised O&M Manual and receive prior approval from the department. In no case shall the application rate exceed 0.75 inch/day (20,365 gallons/acre). The subsurface application rate and procedures for adjusting the rate to match soil moisture and field slope conditions shall be listed in the approved O & M Manual.

23. Land Application Equipment
    (a) Subsurface Injection should be considered where feasible and practicable to reduce exposure to wash off by storm water runoff and to retain nutrients in the soil for crop requirements. Surface application may be used when practical. The ratio of surface and subsurface application shall be outlined in the O & M Manual.
    (b) Permittee shall own or have signed contracts with a commercial applicator to have adequate land application equipment readily available with capacity to apply 120% of the annual process wastewater flows (liquids, sludges and solids) within 85 ten-hour days over the number of acres required for nutrient utilization.
    (c) Implementation procedures for these limitations shall be detailed in the O & M Manual.

24. Nutrient Management
    (a) Nitrogen. The permittee shall not exceed the PAN approach as listed in this permit.
    (b) Phosphorus. Application rates shall not increase soil P levels above 120 pounds per acre soil test P using Bray P-1 test method. When soil test P is at or above 120 pounds per acre, the nutrient application rates shall not exceed the annual crop uptake levels for phosphorus. When state NRCS standards and guidelines become available, the permit will be revised to include the Phosphorus Threshold and Phosphorus Index methods to be developed under the USDA, NRCS National Policy, General Manual, Part 402.06.
    (c) The actual application rates for a given year or growing season must be adjusted based on the approved management approach and the actual wastewater and soil testing results and crop requirement. If crop yields are significantly less than that predicted in the nutrient management plan for reasons other than climatic factors, the application rates must be adjusted or the yields increased through appropriate changes in management practice.
    (d) This permit will be modified to require a CNMP after promulgation of applicable EPA rules and guidelines. The CNMP will replace the current PAN and phosphorus methods.

C. SPECIAL CONDITIONS (continued)

25. PAN Procedure

(a) The PAN method predicts the typical amount of nitrogen that is expected to be available to plants based on the median or average values from the reference publications listed herein. Actual nitrogen available to plants during a growing season may be more or less than the predicted values due to climatic variations. Supplemental nitrogen applications during the growing season may be added to correct plant deficiencies. Wastewater, sludge and fertilizer nitrogen applications shall be based upon crop nitrogen requirements based on realistic crop yield goals. The wastewater application rate shall be calculated as follows:

PAN = CNR - SRN – CFN

WHERE: **CFN** = Commercial Fertilizer Nitrogen applied in pounds N/acre.
CNR = Crop Nitrogen Requirement in pounds N/acre
PAN = Plant Available Nitrogen in wastewater and sludges expressed as annual pounds N/acre.
SRN = Soil Residual Nitrogen in pounds N/acre.

(b) Plant Available Nitrogen(PAN) is calculated as follows:

PAN = [Ammonia Nitrogen] x [Availability Factor]
+ [Organic Nitrogen] x [Availability Factor]
+ [Nitrate Nitrogen] x [Availability Factor]

Note: For anaerobic treated wastewater and sludges, the nitrate nitrogen amounts will be negligible and can be ignored.

(c) Plant Available Nitrogen (PAN) Availability factors for wastewater and sludges are as follows:

1. Average availability factors for all fields:

Type of Nitrogen	**Surface Application**	**Immediate Incorporation or Subsurface Injection**
Organic	0.25 - 0.75*	0.25 - 0.75*
Ammonia	0.6**	0.9**
Nitrate	0.9**	0.9**

* Organic Nitrogen = [Total Kjeldahl Nitrogen as N] - [Ammonia as N].
Availability Factors based on time after application and waste type are:

Type of Manure by Animal Type and Waste Storage Method	Availability Factor by Time Period Year 1	Year 2	Year 3	Cumulative Year 3+
Anaerobic Lagoons (all animals/poultry)	0.35	0.18	0.09	0.62
Liquid storage basins (except poultry)	0.35	0.18	0.09	0.62
Poultry - storage basins and dry litter	0.60	0.10	0.05	0.75
Manure solids – beef, dairy, swine				
without bedding	0.35	0.18	0.09	0.62
with bedding	0.25	0.13	0.07	0.45

NOTES: Year 1 is the current year of manure application; Year 2 is the previous year of manure application; and Year 3 is manure application two years ago. Nitrogen availability for Years 1, 2 and 3 must be added when manure is applied in consecutive years. The cumulative factor is used when manure is applied at about the same rate for 3 consecutive years or longer.

** Inorganic nitrogen availability (Nitrate + Ammonia) based on the typical soil and climate conditions when considering additions due to precipitation, dry deposition, and foliar absorption versus losses due to volatilization and denitrification (10% denitrification loss is included). The permittee may choose to use this average value for all fields or may adjust the N availability based on site specific soil conditions using the tables below under paragraph 25.c.2.

C. SPECIAL CONDITIONS (continued)

25. PAN Procedure (continued)

2. Field Specific Availability Factors for Inorganic Nitrogen.

For Ammonia and Nitrate Nitrogen factors, the permittee may choose to use the average value for all fields under paragraph C.1. above, or may use the alternate factor on a field specific basis using the tables below. The approved factors for each field will be included in the O&M Manual.

Table A. Alternate Field Specific Availability Factor for Surface Application

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly Drained	Poorly drained
		% of inorganic N (manure., precipitation) available			
< 2	71	66	62	56	45
2-5	66	60	56	49	30
> 5	63	56	49	38	19

Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook (AWMFH), April 1992, Tables 11-6 and 11-8.

Table B. Alternate Field Specific Availability Factor for Sub-Surface Injection or Immediate Incorporation.

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly Drained	Poorly drained
		% of inorganic N (manure., precipitation) available			
< 2	89	84	78	70	57
2-5	84	76	70	62	38
> 5	80	70	62	48	24

Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook (AWMFH), April 1992, Tables 11-6 and 11-8.

(d) Soil Residual Nitrogen (SRN).

1. For Annual Crops, the nitrogen availability from soil organic matter must be included based on soil CEC and crop season as follows:

SRN in pound N/acre* = [percent organic mater] x Soil Availability Factor

Soil Availability Factor by Soil CEC Ranges and Organic Matter

Growing Season	Organic Matter	CEC < 10	CEC 10-18	CEC >18
Summer	1%	40*	20	10
Winter	1%	20*	10	5

***Note:** If CEC is less than 10 and organic matter is 1.5% or greater, the total SRN is constant at 60 pounds nitrogen for summer and 30 pounds for winter.

C. SPECIAL CONDITIONS (continued)

25. Plant Available Nitrogen Procedure (continued)

2. For Perennial Crops the SRN is considered zero (0) for purposes of these calculations because the SRN has already been considered in the crop fertilization recommendations in the referenced publications.

(e) Conversion Factors for laboratory testing results:
[mg/L or mg/kg or ppm] x [conversion factor] = [pounds per Unit Volume]

Unit Volume	Conversion Factors
lbs/acre inch	0.226
lbs/1,000 gallons	0.0083
lbs/100 cubic feet	0.0062
lbs/ton (wet wt)	0.002

(f) Crop nitrogen requirements shall be based on University of Missouri publication, Soil Test Interpretations and Recommendations Handbook, as revised or one of the other reference publications listed in this permit. Alternate reference publications may be used only upon prior approval by the department and shall be listed in the approved O & M Manual.

(g) If a crop is not harvested, the PAN rate shall not exceed 40 lbs/acre/year and grass vegetation must be maintained on the site.

(h) PAN calculations for land used for grazing cattle shall include both manure additions by cattle and crop nitrogen consumed by the cattle based on actual cow days per acre/year. This permit does not authorize grazing of cattle where prohibited by state statute under Chapter 350 RSMo.

(i) PAN calculations, application amounts, crop yields and crop removal rates shall be listed in the annual report.

(j) Alternate nitrogen availability factors may be considered based upon site-specific conditions for each field and submittal of scientific justification. Alternate factors will be reviewed and approved by the department as part of the O & M Manual.

(k) Supplemental nitrogen may be added to row crops when determined necessary for proper plant growth based on testing of plant vegetation or soil nitrate testing during the growing season. Procedures will be reviewed and approved by the department as part of the O & M Manual.

(l) Primary reference publications used herein are:

1. Livestock Waste Facilities Handbook, Midwest Plan Service, MWPS-18, April 1993.
2. National Engineering Handbook, Part 651, Agricultural Waste Management Field Book, USDA, Natural Resources Conservation Service (NRCS), April 1992 and current supplements.
3. Managing Nitrogen for Groundwater Quality and Farm Profitability, Soil Science Society of America, Inc., 1991.
4. Soil Test Interpretations and Recommendations Handbook, University of Missouri, Department of Agronomy, December, 1992.
5. Plant Available Nitrogen Procedure, Missouri Department of Natural Resources, Water Protection Program, April, 1998.

26. O & M Manual

The permittee shall develop, maintain and implement an O&M Manual that includes all necessary items to ensure the operation and integrity of the

waste handling and land application systems. Copies of the O&M Manual and subsequent revisions shall be submitted to the department's Water Protection Program and Regional Office for review and approval. The O&M Manual shall include, but not limited to, the following:

C. SPECIAL CONDITIONS (continued)

26. Operation and Maintenance Manual (continued)
    (a) Detailed maps of the property showing all land application fields including the identification numbers for each field. The maps shall also indicate separation distances from streams, ponds, wells, and property lines and shall indicate areas of 0-10% slope, 10-20% slope, and over 20% slope. Indicate areas that are not suitable for land application. The maps shall also include the location of all buildings, pump stations, lagoons, containment structures, irrigation pipelines, irrigation riser connections, underground terrace outlets, composting areas, dead animal storage or disposal areas, domestic wastewater treatment systems and other waste handling units. The maps shall also depict all locations of classified streams, lakes and associated tributaries. The maps shall also indicate the location of all outfalls.
    (b) Start up procedures, field supervision during operation, and shutdown procedures of irrigation equipment.
    (c) Procedures for providing the separation distances required by this permit and as specified in 10 CSR 20-8.020 (15) (B).
    (d) Sample collection, preservation, and testing procedures.
    (e) Procedures for determining PAN loading rates.
    (f) Recordkeeping forms for tracking each field, and storage structure. This shall include testing results, crops, yields, and application rates for each field. Records for each field shall include dates and amounts applied.
    (g) A procedure for promptly reporting spills or discharges to the permittee plant manager and to the department.
    (h) A program to keep debris out of the basins and concrete pit.
    (i) A program for routine, unannounced inspections of land application sites and records to ensure that all directives for land application from the permittee's central office are being followed. Records of the inspections shall be maintained by the permittee and made available to the department upon request.
    (j) A procedure to assure that all appropriate employees are properly trained in operation of the waste systems and are familiar with the O&M Manual.
    (k) Procedure for adjusting application periods and rates based on soil infiltration capacity, soil moisture content, and percent of soil field (saturation) capacity.
    (l) List of number, size, and capacity of waste removal, hauling and land application equipment.
    (m) Number of suitable days each year when land application will occur based on historical one-in-ten year wettest precipitation and capacity of spreading equipment and personnel available.
    (n) Procedure to avoid application if there is a weather forecast for significant precipitation within 24 hours.

27. Underground Tile Outlets at Land Application Sites
    (a) Any underground tile outlets from field terraces or subsurface field drainage tiles shall be shown on the site maps for all land application sites.
    (b) To prevent potential discharge of wastewater during irrigation of fields with underground tile outlets for terraced fields, the permittee shall either cap the inlets at the fields during irrigation, provide a 150-foot grass buffer area between the inlets and wetted irrigation area, use subsurface injection type application equipment or install secondary containment structures below the tile outlets.
    (c) The O & M Manual shall include specific operating details for these fields to prevent discharge of wastewater during wastewater irrigation or leaching of nitrogen through the soils and into the tile drainage system.

28. Bird Mortalities
    Bird mortalities shall be collected daily and sent to a rendering facility or deposited in the compost building. There shall be no discharge from the compost building to the ground surface.